UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND REGION
ONE CONGRESS STREET
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

NPDES PERMIT NO.: NH0000116

NAME AND ADDRESS OF APPLICANT:

NYCOA (Nylon Corporation of America)
333 Sundial Avenue
Manchester, New Hampshire 03103-7230

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

NYCOA (Nylon Corporation of America)
333 Sundial Avenue
Manchester, New Hampshire 03103-7230

RECEIVING WATER: Merrimack River

CLASSIFICATION: Class B

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I. Proposed Action, Type of Facility and Discharge Location.

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its NPDES permit to discharge non-contact cooling water (NCCW) into the designated receiving water (Merrimack River). The applicant owns and operates a facility for manufacturing a polyamide type synthetic resin (nylon 6) at the above named site. This manufacturing process uses non-contact cooling water. Non-contact cooling water is water employed to reduce or control the temperature of a manufacturing process. That cooling water does not come in direct contact with any raw material, intermediate product, a waste product (other than heat) or finished product. Use of non-contact cooling water which discharges to the surface waters of the United States requires a NPDES Permit.

NYCOA's existing permit was issued on June 1, 2001 and modified on April 23, 2002. The expired permit (hereafter referred to as the "existing permit") has been administratively extended as the applicant filed a reapplication for permit reissuance within the prescribed period as per 40 Code of Federal Regulations (CFR) §122.6. The existing permit authorizes discharge from Outfalls 004 and 007. The location of NYCOA, Outfalls 004 and 007, and the receiving water are shown in Attachment A.

II. Description of Discharge.

A quantitative description of those effluent parameters limited and monitored in the existing permit for the 71-month period August 2001 through June 2007 is presented in Attachment B. The data was compiled from monthly Discharge Monitoring Report (DMR) data submitted by the facility to the NHDES and the EPA. NYCOA submitted

quantitative data with their reapplication submissions (FORMs 1 and 2C) along with the DMR data; all of which are on file at the EPA Boston office. This effluent data was compared to the permit's effluent limits to ensure the permittee is effectively meeting the permit's limits. The draft permit contains limits for Non-Contact Cooling Water Flow, Temperature, pH, and a requirement for a minimum of two Whole Effluent Toxicity (WET) Tests.

III. Limitations and Conditions.

Effluent limitations and monitoring requirements are found in PART I of the draft NPDES permit. The basis for each limit and condition is discussed in sections IV.C. through IV.I. of this Fact Sheet.

IV. Permit Basis and Explanation of Effluent Limitations Derivation

A. General Statutory and Regulatory Background

Congress enacted the Clean Water Act ("CWA" or "Act"), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specified permitting sections of the Act, one of which is Section 402. See CWA §§ 301(a), 402(a). Section 402 establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System or NPDES. Under this section of the Act, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. See CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA § 402(a)(1),(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. See CWA §§ 301, 303, 304(b); 40 C.F.R. Parts 122, 125 and 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant-reducing technology available and economically achievable for the type of facility being permitted. See CWA § 301(b).

Water quality-based effluent limits, on the other hand, are designed to ensure that state water quality standards are met regardless of the decision made with respect to technology and economics in establishing technology-based limitations. In particular, Section 301(b)(1)(C) requires achievement of, "any more stringent limitation, including those necessary to meet water

quality standards...established pursuant to any State law or regulation..." See 40 C.F.R. §§ 122.4(d), 122.44(d)(1) (providing that a permit must contain effluent limits as necessary to protect state water quality standards, "including State narrative criteria for water quality") (emphasis added) and 122.44(d)(5) (providing in part that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA).

The CWA requires that states develop water quality standards for all water bodies within the state. CWA § 303. These standards have three parts: (1) one or more "designated uses" for each water body or water body segment in the state; (2) water quality "criteria," consisting of numerical concentration levels and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) an antidegradation provision, focused on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. CWA § 303(c)(2)(A); 40 C.F.R. § 131.12. The limits and conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards.

The applicable New Hampshire water quality standards can be found in Surface Water Quality Regulations, Chapter Env-Wq 1700 et seq. See generally, Title L, Water Management and Protection, Chapter 485-A, Water Pollution and Waste Disposal Section. Hereinafter, New Hampshire's Surface Water Quality Regulations are referred to as the NH Standards.

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from the state's water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. Acute aquatic life criteria are generally implemented through maximum daily limits, and chronic aquatic life criteria are generally implemented through average monthly limits.

Where a State has not established a numeric water quality criterion for a specific chemical pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use"; based on a "case-by-case basis" using CWA Section 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, in certain

circumstances, based on an “indicator parameter.” 40 C.F.R. § 122.44(d)(1)(vi)(A-C).

All statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired. When technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. See 40 C.F.R. § 125.3(a)(1). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES permit. The regulations governing EPA's NPDES permit program are generally found in 40 C.F.R. Parts 122, 124, 125 and 136.

B. Development of Water Quality-based Limits

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality standard, including narrative water quality criteria. 40 C.F.R. § 122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

Reasonable Potential

In determining reasonable potential, EPA considers: (1) existing controls on point and nonpoint sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from the permit application, monthly DMRs and State and Federal water quality reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in *Technical Support Document for Water Quality-based Toxics Controls,* March 1991, EPA/505/2-90-001 in Section 3; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire regulations (RSA 485-A:8,VI, Env-Wq 1705.02), available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life and human health criteria for non-carcinogens, or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the outfall. Furthermore, 10 percent (%) of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Wq 1705.01.

Anti-Backsliding

Section 402(o) of the CWA generally provides that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. EPA has also promulgated anti-backsliding regulations, which are found at 40 C.F.R. § 122.44(l). Unless applicable anti-backsliding exceptions are met, the limits and conditions in the reissued permit must be at least as stringent as those in the previous permit.

State Certification

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency stating that the permit will comply with all applicable federal effluent limitations and state water quality standards. See CWA § 401(a)(1). The regulatory provisions pertaining to state certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. 40 C.F.R. § 124.53(a). The regulations further provide that, "when certification is required....no final permit shall be issued...unless the final permit incorporates the requirements specified in the certification under § 124.53(e)." 40 C.F.R. § 124.55(a)(2). Section 124.53(e) in turn provides that the State certification shall include "any conditions more stringent than those in the draft permit which the State finds necessary" to assure compliance with, among other things, state water quality standards, See 40 C.F.R. § 124.53(e)(2), and shall also include, "[a] statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law, including water quality standards," 40 C.F.R.§ 124.53(e)(3).

However, when EPA reasonably believes that a state water quality standard requires a more stringent permit limitation than that reflected in a state certification, it has an independent duty under CWA § 301(b)(1)(C) to include more stringent permit limitations. See 40 C.F.R. §§ 122.44(d)(1) and (5). It should be noted that under CWA § 401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by state law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 C.F.R. § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." Id. EPA regulations pertaining to permit limits

based upon water quality standards and state requirements are contained in 40 C.F.R. § 122.4(d) and 40 C.F.R. § 122.44(d).

C. Outfall 004 and Non-Contact Cooling Water Intake Structures

1. Flow

The existing permit for NYCOA limits flow to 2.0 MGD at Outfall 004. Analysis of NYCOA's flow data shows that the facility has an average monthly non-contact cooling water flow of 0.62 MGD, with 1.5 MGD experienced as the maximum monthly flow. In a letter response, dated August 3, 2007, to an EPA Section 308 of the Act inquiry requesting information concerning NYCOA's CWIS, NYCOA stated the maximum withdraw rate of the CWIS was 1000 GPM (1.44 MGD). NYCOA does not need a flow limit that is 25% higher that the facility's maximum non-contact cooling water design capacity of 1000 GPM. Accordingly, EPA reevaluated the 2.0 MGD limit of NYCOA's existing permit, and lowered that limit to 1.5 MGD in the draft permit. EPA has set the flow limit at 1.5 MGD instead of NYCOA's maximum non-contact cooling water design capacity of 1.44 MGD. This is to allow for slight variability in flow instrumentation measurements or cooling water pump efficiencies when the non-contact cooling water system is operating near flow capacity.

2. Conventional Pollutants

pH

The pH limits in the draft permit contain a pH limitation of 6.5-8.0 Standard Units (S.U.). It has been the policy of the EPA and NHDES to express pH limits as a range with an upper and lower limit. For NCCW, NHDES policy allows that a differential pH be reported when an outfall's reported pH exceeds the pH limit range of 6.5-8.0 S.U. In this circumstance, the pH differential is reported by the permittee to demonstrate the NCCW has not had the pH altered by the industrial process the NCCW is cooling. The reported pH differential demonstrates that the naturally occurring pH of the water body, in this case the Merrimack River, lays outside of the State's pH Water Quality effluent limitations.

The required sampling for pH has been reduced to once per week from three times per week. Since NYCOA has stated it has ceased applying sodium hypochlorite as a biocide, the reasonable potential that the application of a biocide could affect the pH of NYCOA's NCCW has been eliminated. Since no chemicals are added to NYCOA's NCCW, potential of the NCCW pH being affected has significantly decreased. If reasonable potential for an effluent to be altered has decreased, the monitoring frequency of the effluent can be reduced.

3. Non-Conventional and Toxic Pollutants

Water quality-based limits for specific toxic pollutants such as chlorine, ammonia, etc. are determined from numeric chemical specific criteria derived from extensive scientific studies. The EPA has summarized and published specific toxic pollutants and their associated toxicity criteria in **Quality Criteria for Water, 1986, EPA 440/5-86-001 as amended**, commonly known as the Federal "Gold Book". Each criterion consists of two values; an acute aquatic life criterion to protect against short-term effects, such as death, and a chronic aquatic life criterion to protect against long-term effects, such as poor reproduction or impaired growth. New Hampshire adopted these "Gold Book" criteria, with certain exceptions and included them as part of the State's Surface Water Quality Regulations adopted on September 30, 1996. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine a specific pollutant's draft permit limit, such as for the fast acting toxicant, chlorine. Available dilution and limits for Total Residual Chlorine for this facility are discussed below.

Total Residual Chlorine

In the NPDES permit application, NYCOA states, "… the use of sodium hypochlorite in the non-contact cooling water system has been permanently discontinued." Previously, NYCOA injected sodium hypochlorite into the NCCW as a biocide to kill or prevent the growth of algae. Growth of algae hinders the flow of cooling water, diminishing the effectiveness of the cooling water to remove heat from the industrial processes. After the existing permit was issued, NYCOA began to replace a substantial portion of the facilities existing NCCW piping with stainless steel piping. Stainless steel pipe does not offer a substrate conducive for algae to grow. Since algae were no longer found in the NCCW piping, the need to use sodium hypochlorite, a biocide, was eliminated.

Accordingly, EPA has removed the monitoring and limits for total residue chlorine. The result of NYCOA discontinuing the use of sodium hypochlorite is the draft permit prohibits NYCOA from applying sodium hypochlorite or any other biocide as an antifouling agent in its facility's non-contact cooling water. Elimination of the Total Residual Chlorine monitoring and limits are in accordance with Anti-Backsliding regulations. In accordance with 40 CFR §122.44(l)(2)(i)(A), a reissued NPDES permit may have effluent limits less stringent than the previous permit when substantial alterations to the permitted facility justify the application of less stringent effluent limitations.

Whole Effluent Toxicity

EPA's Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering the nation's waterways. EPA New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Whole Effluent Toxicity (WET) evaluates the interactions between pollutants, thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. WET also measures the "Additive" and/or "Antagonistic" effects of individual chemical pollutants. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

New Hampshire law states that, "...all waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;...." (N.H. Surface Water Quality Regulations, PART Env-Wq 1703.21(a)). The federal NPDES regulations, 40 CFR §122.44(d)(1)(v), require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criterion for toxicity.

The existing permit required NYCOA to conduct a one-time WET test within 90 days after the permit became effective. This requirement's objective was to ensure the facility's non-contact cooling water was not toxic, therefore, could not potentially harm the environment. This WET test showed NYCOA's NCCW was potentially toxic. (See Attachment B, Table III.) The chronic test results indicate that the test organism Pimephales promelas, experienced an adverse effect at a low concentration, 12.5%, of effluent. The EPA subsequently directed NYCOA to conduct further WET testing. After two additional WET tests, Pimephales promelas continued to show adverse reaction in the chronic test.

This adverse response in the chronic portion of the WET Tests was demonstrated by a low Chronic-No Observed Effect Concentration (C-NOEC) for the test organism, Pimephales promelas. C-NOEC is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing. The lower the value the C-NOEC concentration, the higher the probability an effluent is toxic.

After these tests were conducted, NHDES-WD conducted a routine on-

site inspection at NYCOA. Since it was uncertain whether these drains discharged to the storm sewer system or the NCCW system, one of the outcomes of that inspection was that NYCOA was directed to seal certain floor drains in their facility. Additionally, NYCOA in June 2004 permanetely discontinued using sodium hypochlorite in the NCCW as a biocide. It is possible that discharges from the floor drains, in combination with the biocide, were causing the chronic toxicity shown by the Pimephales promelas.

In order to assess whether NYCOA's NCCW remains toxic or not, EPA has added a requirement in the draft permit for NYCOA to conduct two WET tests. The first WET test will be required in the calendar quarter that the permit becomes effective and the second test will be required in the subsequent quarter.

As part of the WET test, both the LC50 and C-NOEC will be measured. LC50 is the concentration of non-contact cooling water (effluent) causing mortality to 50 percent (%) of the test organisms. C-NOEC (Chronic-No Observed Effect Concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing. The EPA and NHDES-WD will review the toxicity tests to determine compliance with the no toxics provision of the ACT.

If toxicity is found, a monitoring schedule and testing requirements, such as a Toxicity Reduction Evaluation, may be imposed. The permit may also be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements or chemical specific limits. These actions will occur if the EPA determines the NH Standards are not adequately met and/or uses of the waterways are not adequately protected during the remaining life of the permit. Results of these toxicity tests are considered "new information not available at permit development"; therefore, the permitting authority is allowed to use said information to modify an issued permit under authority in 40 CFR §122.62(a)(2).

Temperature

The Merrimack River in the Manchester, NH area is classified as a warm water fishery by the New Hampshire Fish and Game Department (NHFG). Carry-over of the temperature limit from the existing to the draft permit is in accordance with the anti-backsliding requirements found in 40 CFR §122.44. The monitoring frequency for average and maximum daily temperature has been decreased in the draft permit to once per week from three times per week for the period October-June. This decrease is justified because monitoring data shows 100 percent compliance with the temperature limits

during these months. The data also demonstrates that NYCOA's effluent temperatures are not variable during this period. This lack of variability allows for the lowering of the frequency of temperature monitoring.

During the period from July – September NYCOA will still be required to monitor for average and maximum daily temperature. Six years of temperature monitoring at NYCOA demonstrates that the facility's thermal discharge approaches the maximum limit of 83°F in the months of July – September. During the six years of monitoring, NYCOA has exceeded its maximum temperature limit only four times; three times in August and once in July. Since NYCOA's effluent discharge approaches its temperature limit during this period, the frequency of monitoring for temperature has not been changed from the existing permit to the draft permit.

4. Cooling Water Intake Structures.

Background

The basis for cooling water intake structure (CWIS) requirements is found in the Clean Water Act (CWA) in Section 316(b), 33 U.S.C. Section 1326(b). Section 316(b) governs requirements related to cooling water intake structures (CWISs) and requires "that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact." The operation of CWISs can cause or contribute to a variety of adverse environmental effects, such as killing or injuring fish larvae and eggs by entraining them in the water withdrawn from a water body and sending them through the facility's cooling system, or by killing or injuring fish and other organisms by impinging them against the intake structure's screens, racks, or other structures. CWA § 316(b) applies if the permit applicant seeks to withdraw cooling water from a water of the United States. CWA § 316(b) applies to this permit due to the presence and operation of a cooling water intake structure at the NYCOA facility.

In the absence of applicable regulations, for many years EPA has made Section 316(b) best technology available (BTA) determinations on a case-by-case basis, based on best professional judgment (BPJ), for both new and existing facilities with regulated CWISs. EPA has promulgated Section 316(b) regulations applicable to certain power plants, to *new* non-power plant facilities with a capacity of more than 2 million gallons per day (MGD), and to offshore oil and gas extraction facilities. NYCOA is neither a power plant nor an oil or gas extraction facility, and is not new. Consequently, no regulations provide specific compliance standards applicable to a Section 316(b) BTA determination at NYCOA. In the absence of applicable compliance standards, Section 316(b) permit requirements for smaller, existing facilities with CWISs, such as NYCOA, continue to be established on a BPJ basis.

State legal requirements, including state water quality standards, also may apply to the development of permit conditions for cooling water intake structures. State water quality standards set designated uses for water bodies within the State and specify narrative and numeric criteria that the water bodies must satisfy. The limits in EPA-issued NPDES permits that address cooling water intake structures must satisfy both CWA § 316(b) and any applicable State requirements, such as appropriate water quality standards [See CWA §§ 301(b)(1)(C), 401(a)(1) and (d), and 510; 40 CFR §§ 122.4(d), 122.44(d), 125.84(e), and 125.94(e); NH Env-Wq §§ 1701.02(b), 1703.19]. The NH-DES has primary responsibility for determining what permit limits are necessary to achieve compliance with State law requirements. Since the NPDES permit that EPA expects to issue to NYCOA will be subject to State certification under CWA § 401, the permit will also need to satisfy any NH-DES conditions of such a certification (See also 40 CFR §§ 124.53 and 124.55). EPA anticipates that the NH-DES will provide this certification before the issuance of the final permit.

Again, Section 316(b) of the CWA addresses the adverse environmental impact of CWISs at facilities requiring NPDES permits. EPA has assessed how the location, design, construction, and capacity of this facility's CWISs reflect the best technology available (BTA) for minimizing adverse environmental impact. In making a BPJ determination of BTA for this facility, EPA considered site-specific information regarding the CWISs at this facility, as well as certain general technical information that EPA developed in support of its regulations under CWA § 316(b) for new facilities with CWISs (the "Phase I rule").

Cooling Water Intake Structure Description

The NYCOA CWIS is located on the eastern bank of the Merrimack River in a segment of the River which is approximately 3000 feet downstream from an area of rapids that extend from the Amoskeag Dam to a point just below the Queen City Avenue Bridge in Manchester, NH. The direction of river flow is in the southerly direction. The CWIS currently consists of twin 30-inch (28-inch interior diameter) cast iron intake pipes with 90-degree elbows (i.e., inlets facing downstream) extend approximately 55 to 60 feet in a westerly direction perpendicular from the eastern bank of the Merrimack River. Presently, the open ends of the two intake pipes do not have screening to restrict fish or debris movement into the pipes.

The ends of the intake pipes are approximately 0.0 to 0.5 feet off the river bottom depending on how river flow affects bottom sediments. The bottom of the pipe inlets are situated in the river at a depth of approximately 4 to 6 feet, based on river flow conditions. The depth of river water above the top of the pipes ranges from 1 to 3 feet. Because of the diminished water clarity

routinely observed in a river of this size, along with the depth of the intake pipes in the river (4 to 6 feet) and the distance of the ends of the intake pipes from the eastern bank of the river (55 to 60 feet), it is not possible to visually inspect the ends of the intake pipes from the shore.

NYCOA's cooling water design flow (1,000 GPM or 2.23 ft^3/sec) is 0.11% of the mean river flow (2,160 ft^3/sec) as measured at the USGS gauge station at Goffs Falls (USGS 01092000, located approximately 2 river miles downstream of the facility). Based on the maximum flow rate for each intake pipe of 500 GPM, the "through screen" velocity is 0.26 ft/sec. This calculation assumes that the open ends of the intake pipes are free of accumulated river sediment or debris.

The average river width along an east west transect at NYCOA's location is approximately 350 feet. The main channel of the river is approximately at mid-stream, or approximately 175 feet from each riverbank. Therefore, the distance of the CWIS inlets is approximately 115 to 120 feet from the main river channel. The river depth in this area is 4 to 6 feet based on flow conditions.

Each of the two intake pipes connects to separate 16-foot wide, 24-foot long, 11-foot high inlet tanks located in the Merrimack River's eastern bank. On the side of each tank opposite from where cooling water enters (the back side of these tanks) is situated a single 3.5-foot wide, 7-foot long, 6-foot high chamber, which is common to both tanks. This chamber receives water from both tanks through two 28 inch diameter openings. This chamber also constitutes the entrance to the facility's subterranean 5-foot by 5-foot cooling water intake tunnel. The intake tunnel has a screen type barrier installed at its inlet. The screen is fabricated from half inch iron rods; welded two inches on center; resulting in a screen opening size of 1.5 inches by 1.5 inches. A through screen velocity of this barrier, using an equivalent hydraulic diameter of this square shaped intake tunnel of 3.27 feet, is calculated to be 0.27 ft/sec. The tunnel is approxmately 34-feet under ground level, and runs 123-feet from the inlet chamber to the basement of NYCOA's boiler building.

In the boiler building, three cooling water pumps draw cooling water from this tunnel. All three pumps are multi-stage vertical centrifugal pumps, where the flow varies depending on system demand, even though the motors rotate at constant speed. The pumping system is mechanically interlocked to allow a maximum flow of 1,000 GPM (2.23 cfs). Pump No. 1 and Pump No. 2, both with a capacity of 400 GPM, can only operate (individually or together) when Pump No. 3 is locked out. Pump No. 3, with a capacity of 1000 GPM, can only operate when Pump No. 1 and Pump No. 2 are locked out. All three cooling water pumps discharge to a single cooling water pipe main. The cooling water in the cooling water main passes through an in-line filter. After passing through the filter, the

cooling water leaves the basement of NYCOA's boiler building and is directed to NYCOA's various production lines.

NYCOA does not employ variable speed pumps to supply cooling water to the facility. However, the facility has the ability to adjust the cooling water flow by employing the three constant flow cooling water pumps in various combinations depending on the facility's cooling water demand. NYCOA, therefore, does use the same approach as employing variable speed cooling water pumps; using only the appropriate amount of water demanded for cooling. The use of variable pumping rates is demonstrated by NYCOA's Discharge Monitoring Report (DMR) data. The past six years of cooling water flow data is graphically depicted on ATTACHMENT C.

Assessment of Current Ecological Conditions and Potential Impact of CWIS Operation

The facility is located in what is described as the Middle Watershed of the Merrimack River, encompassing an area from Manchester to Nashua, New Hampshire. The watershed in this area is characterized by highly developed land use and an increased influence from combined sewer overflows (Merrimack River Watershed Council). These factors can degrade the water quality of a river.

While this reach of the Merrimack River system has not been uniquely identified as significant spawning or nursery habitat for fish species, all life stages of resident freshwater and anadromous fish have the potential to be found in this area.

Resident Freshwater Species

A site-specific fish survey has not been conducted by the permittee in the vicinity of the intake structure. However, based on general information for the Merrimack River, this reach of the river likely supports resident freshwater species such as smallmouth bass, largemouth bass, pickerel, horned pout, black crappie, bluegill, yellow perch, carp, and white sucker. These fish, for the most part, engage in nest building or deposit eggs near the substrate. Spawning activity, fertilized eggs, and larval development tend to take place in slower flowing, benthic river habitat along the shoreline, where aquatic macrophytes and other submerged structures are present. Large numbers of eggs and larvae of these species would not be expected to be free floating in the water column of the main stem of Merrimack River, some 60 feet from the shore, where the facility CWIS intakes are located. Based on an assessment of the characteristics of these life stages and the location of the intakes in the Merrimack River, the potential for entrainment of these life stages by the NYCOA CWIS is low.

Juvenile and adult life stages of these species also tend to prefer habitat associated with the river bank. This habitat is characterized by diminished river flow and the presence of

underwater structure. If resident species do encounter the intake pipes, some 60 feet away from the river banks, the low intake flow (0.26 ft/sec) can be resisted by these species. Additionally, the barrier screen installed at the inlet to the cooling water intake tunnel, with a screen opening size of 1.5 in. by 1.5 in., will block the voluntary movement of adult and larger juvenile fish further into the intake system. Based on an assessment of the characteristics of these life stages and the location of the intakes in the Merrimack River, the potential for impingement of these life stages by the NYCOA CWIS is low.

Anadromous Fish Species

Anadromous fish species, which spend their adult life in a marine environment and travel upstream into freshwater rivers to spawn and develop, face many challenges to successful reproduction and early development in the Merrimack River.

Among these challenges are dams that restrict anadromous fish passage in the main stem of the Merrimack River, downstream of the NYCOA facility. Although they do provide fish passage, the Essex Dam in Lawrence, Massachusetts and the Pawtucket Dam in Lowell, Massachusetts both present obstacles to the upstream movement of anadromous fish to the reach of the river near NYCOA. For example, in 2007, Atlantic salmon (75 fish), American shad (15,860 fish) and river herring (1,169 fish) were all documented moving past the Essex Dam on their way upstream (USFWS). Further upstream during that same year, only American shad (1,653 fish) were documented from that list of species at the Pawtucket Dam (USFWS). While no data were available in 2007 for fish passage at the next upstream dam, the Amoskeag Dam at Manchester, New Hampshire, a fish counting program at this dam in 2006 recorded no anadromous fish. This dam is approximately 3000 feet upstream of the NYCOA intakes. Based on this assessment, there is a low probability that anadromous fish would currently come in contact with the NYCOA CWISs.

American Shad and River Herring

A multi-agency plan is in place to restore anadromous species to the entire Merrimack River Basin (see *The Strategic Plan for the Restoration of Anadromous Fish to the Merrimack River*). The plan is administered by the U.S. Fish & Wildlife Service (USFWS) with the EPA, NH-DES, NH Fish and Game (NHFG) and the Massachusetts Department of Environmental Protection (MassDEP) participating. River herring (alewife and blueback herring) and American shad have been stocked in accordance with this effort. Therefore, even though available information does not document the presence of river herring and American shad near the CWISs, a more complete discussion is warranted in the event that stocking efforts and anadromous fish return activity become more successful in the future.

First, any adult shad or river herring traveling past the Amoskeag Dam to spawn would have the potential to come in contact with the NYCOA CWISs. These fish, however, would likely travel in the main channel of the river, which is approximately 115 to 120 feet from the CWISs. In addition, spawning migration takes place in the early spring, when river levels are relatively high, further reducing the potential for contact with the CWISs.

Any adults that do swim in the immediate vicinity of the CWISs will likely be swimming against a river velocity well over the approach velocity of the CWISs, based on the river conditions to be expected during elevated spring flows and the location of the CWISs. These spawning fish would be able to resist the intake's approach velocity of 0.26 ft/sec and continue their spawning migration.

It is possible that some adult shad or herring may use the main stem of the river just downstream of the Amoskeag Dam to spawn. Some may spawn in habitat close to the river bank, away from the CWISs. River herring in the main stem of the Charles River, in Boston, Massachusetts, have been observed spawning very close to the shore, among submerged vegetation (Personal Observation, Nagle, EPA 2004).

If appreciable natural spawning does occur downstream of the Amoskeag Dam, shad and herring eggs and larvae would be present in the water column. In addition, stocked young-of-year shad and herring may also be present in the water column. Ichthyoplankton and young of year fish that drift closer to the location of the CWISs will likely experience low entrainment potential due to the relatively low capacity, low intake velocity and downstream orientation of the CWISs.

Atlantic Salmon

The plan to restore anadromous species to the Merrimack River Basin also addresses Atlantic salmon restoration (see *The Strategic Plan for the Restoration of Anadromous Fish to the Merrimack River*). While some natural spawning of Atlantic salmon may take place, stocking efforts are under way to help restore this species to its historical range in the river.

Atlantic salmon eggs are fertilized, hatched and reared under controlled conditions at a hatchery. The resulting fry are placed in the upper Merrimack River and its tributaries.

The objective of the stocking program in the Upper Merrimack River Basin is for the fry to establish territories in the upstream waters of the river, where they remain for 2-3 years. After 2-3 years, upon maturation into smolts, the salmon begin their migration downriver towards the ocean. Since stocking locations are upstream of NYCOA's intake, the smolts would pass by the plant on

their way downstream and could potentially enter or be drawn into the intake system. However, the migration of salmon smolts in the spring tends to be during high flows, and the higher velocity of the river will tend to carry the smolts past the downstream oriented intakes. Thus, they are unlikely to be drawn into the CWISs. Moreover, any smolts that do swim into the area of the CWIS are likely to be able to resist being drawn into the intake, given its relatively low intake velocities (0.26 ft/sec), as discussed above.

It is possible that some natural spawning of Atlantic salmon may take place in the tributaries upstream of the NYCOA intakes. Any eggs from such spawning, however, would stay buried in the nest created by the female until they hatch. These eggs would not be expected to rise into the water column and drift downstream. Once the eggs hatch, fry generally live near the bottom of the water column and do not travel any appreciable distances. Therefore, any small number of naturally occurring eggs and larvae potentially found in the Upper Merrimack or suitable upstream tributaries to the Upper Merrimack would not be expected to be found close enough to CWISs of the facility to become entrained.

Components of BTA for CWISs at NYCOA

In making this § 316(b) determination, EPA considered the adverse environmental effects from operation of the facility's CWIS and technology options for minimizing these adverse effects by evaluating the CWISs' location, design, construction, and capacity. This site-specific determination of BTA for the NYCOA Draft Permit is based on BPJ. This BPJ determination of BTA consists of the following components:

Location

Although a site specific survey has not been conducted, indirect evidence and fish return data from the Amoskeag Dam indicate a low probability of quality spawning habitat in the reach of the river where the NYCOA CWISs are located. As discussed previously, spawning and nursery habitat for anadromous fish species, as well as suitable habitat for stocking young-of-year river herring or American shad, or Atlantic salmon smolts, are generally considered to be the smaller tributaries and associated habitat in the Upper Merrimack River. The CWISs of this facility are located in the main stem of the Middle Merrimack River, well downstream of these tributaries. The location of the CWISs in a portion of the river that is not regarded as critical spawning and nursery habitat is one component of BTA to minimize impingement and entrainment.

The CWISs are positioned approximately 60 feet away from the slower flowing near-bank area of the river, where residential fish spawning is likely to take place. This reduces the potential for entrainment of early life stages of resident fish. The CWISs are

also located approximately 120 feet from the main channel of the river, where migrating anadromous fish species are likely to travel. This location decreases the potential for migrating species to come in contact with the CWISs. Further, NYCOA's two intake pipes are elevated above the bottom of the Merrimack River. This decreases the potential of the CWISs to negatively impact benthic or near benthic organisms.

The location of the CWISs away from the river bank, main channel and benthic habitat of the river are considered components of BTA. NYCOA shall conduct periodic river sediment cleaning and removal so the intake pipes remain off the river's bottom. This will ensure that BTA to minimize adverse impacts to benthic organisms is maintained.

Capacity

The design flow capacity of the NYCOA's non-contact cooling water system is 1.44 MGD (2.23 cfs). Since NYCOA employs two intake pipes, each pipe has a maximum capacity of 0.72 MGD (1.12 cfs). This withdrawal represents less than 0.1% of the averaged mean flow of the Merrimack River at Manchester, NH. Based on data from the Goffs Falls USGS gauge station, the averaged mean flow rate is 2160 cfs for the period of September 1936 through September 2006. For comparison, the Phase I Rule, which is not applicable to this permit, uses a value of 5% of the mean annual flow as the upper limit allowed for the location of a new facility CWIS in a freshwater river. See 40 C.F.R. 125.84(b)(3)(i). This maximum withdrawal is also considerably lower than the 7Q10 of the Merrimack River at Manchester, NH, which is 645 cfs. The 7Q10 flow of a freshwater river is one method to characterize a low flow condition in a river. The 7Q10 flow is defined as the lowest average seven consecutive day low flow with an average return frequency of once in 10 years, determined hydrologically. The maximum withdrawal of 2.23 cfs is approximately 0.35% of the 7Q10 of the river. The low intake flow of the facility, compared to river flow, even under historic low flow conditions, is another component of BTA to minimize impingement and entrainment.

The facility also uses three separate pumps in combination to withdraw the minimum amount of water needed for cooling. This is also a component of BTA.

Design

The velocity of water entering a cooling water intake structure exerts a direct physical force against which fish and other organisms must act to avoid impingement or entrainment. As velocity increases at a CWIS, so does the potential for impingement and entrainment. EPA considers velocity to be one of the more important factors that can be controlled to minimize adverse environmental impacts at CWISs. See 65 FR 49060, 49087 (Aug. 10,

2000). EPA has identified a “through screen” velocity threshold of 0.5 fps as protective to minimize impingement of most species of adult and juvenile fish. This determination is fully discussed at 65 FR 49060, 49087-88.

The intake velocity at the intake pipes of the CWISs is calculated as a maximum velocity of 0.26 fps. As noted above, since velocities of 0.5 ft/s and below are considered sufficiently low enough to allow fish to avoid being impinged at the CWISs. NYCOA’s maximum velocity of 0.26 ft/s at the river intake is considered one component of BTA to minimize impingement.

The CWIS intake pipes do not have screens or bars to restrict the movement of fish into the pipes. Based on the low intake velocity, it is likely that fish entering the pipes to seek cover would be able to swim back into the river without being drawn into the facility. However, there is the potential that fish entering the CWISs may become disoriented or swim far into the pipe and not return to the river. For any fish that continue to travel into NYCOA’s NCCW system, the barrier screen installed at the inlet to the cooling water intake tunnel, with a screen opening size of 1.5 in. by 1.5 in., will block further voluntary movement of adult and larger juvenile fish further into the intake system. Additionally, the low through screen velocity, 0.21 ft/sec, of this barrier screen can be resisted by most adult and juvenile fish. The barrier screen installed at the intake to the cooling water intake tunnel and the low through-screen velocity at the barrier screen (0.21 ft/sec) are components of BTA.

Impingement Monitoring

While the preceding factors provide a sufficient basis for this BTA determination, EPA recognizes that no impingement or entrainment data has been collected by NYCOA in support of their permit application. The location of the CWISs, 60 feet from the bank of the river, submerged below several feet of river water of diminished clarity, precludes routine visual monitoring of the intake structure from the facility to detect impingement. This site-specific obstacle to the establishment of a direct visual impingement monitoring program precludes the practical application of an impingement monitoring program. In addition, the two inch square (on center) grating creating a screen opening size of 1.5 inches by 1.5 inches, located deep within the pipe, allows no practical access for fish collection or surveillance. The relatively low "through screen" velocity of 0.21 ft/sec at this point, though, is not expected to cause impingement of any adult or juvenile fish that voluntarily travel to this section of the intake piping.

Based on a review of the design of the CWISs and discussions with the permittee, there is currently no location from the intake of

cooling water from the Merrimack River to NYCOA's cooling water pumps where a practicable direct visual impingement monitoring program can be established. A structural modification to the CWISs to provide ready access in order to establish an acceptable impingement monitoring location is not feasible. As discussed earlier in this document, the only fish likely to encounter the cooling water pump suctions at the end of CWIS system are small juvenile fish that voluntarily swim the 60 foot length of intake pipe, then pass through the intake tunnel's barrier screen (opening size of 1.5 inches by 1.5 inches) and then swim another 123-feet to the vicinity of the cooling water pump's suctions. While EPA recognizes that any degree of impingement of small juvenile fish in this manner is unlikely, no data has been collected to support this position.

Therefore, EPA has proposed a modified impingement monitoring program. The modified program calls for the careful inspection of the only area of the CWISs that is reasonably accessible for meaningful data collection. The only location providing reasonable access to the CWIS is after the discharge of the cooling water pumps. Two monitoring approaches are identified. One approach requires that monitoring inspections be conducted at the cooling water filter assembly located downstream of the discharge from the cooling water pumps. This monitoring would require the disassembly and visual inspection of the filter for evidence that fish have been entrained. An alternate monitoring approach is for the permittee to collect and inspect the filter backwash discharge water from the cooling water filter. The draft permit requires the permittee to select between the two alternatives that best allows personnel to clearly determine if small juvenile fish have become trapped on the cooling water filter assembly. After making that selection, the permittee is required to establish an impingement monitoring program to inspect the cooling water filter or backwash water from this filter three times a week. During each inspection, the filter contents or collected backwash discharge must represent non-contact cooling water filtering of at least eight hours. Any fish collected in this manner will be identified, recorded in a log book, and if alive, returned to the river

BTA Determination

Based on current CWIS operations, information available at this time, and the location, design, capacity and construction of the CWIS, EPA has determined the adverse environmental impacts of the CWIS at NYCOA are low. In order to minimize adverse environmental impacts EPA is requiring several components of BTA in the draft permit:

- First, regarding CWIS capacity, to minimize entrainment and impingement, Outfall 004's maximum flow has been lowered to a limited of 1.5 MGD. Lowering the limit of the discharge flow will result in limiting the amount of water draw from the

Merrimack River for NYCOA's non-contact cooling water system. In addition, the permittee shall operate its pumps to withdraw NCCW such that only the minimum required amount of cooling water is pumped to meet the facility's cooling demands.

- Second, regarding CWIS location, the location of the two intake pipes of the CWIS away from the river bank and benthic habitat of the river are considered components of BTA.

- Third, the permittee shall remove built-up sediment from NCCW intake pipe suction and the pipe's interior.

- Fourth, the through screen velocity of the barrier screen at the inlet of the cooling water tunnel shall not exceed 0.5 ft/sec.

EPA regards the location, design, capacity and construction of the existing CWIS, as operated under condition Part I.D.2 of the draft permit, as BTA for this specific facility.

While the preceding factors provide a sufficient basis for this BTA determination, EPA recognizes that no impingement or entrainment data has been collected by NYCOA in support of their permit application. Monitoring of the intake structure from within the facility to detect impingement is precluded due to lack of available access. Monitoring at end of the intake pipes in the river also is restricted by access. The location of the CWIS, 120 feet from the bank of the river, is obscured because there is little contrast between the pipe's color and the river's bottom. In addition, surface currents usually distort or diminish the water's clarity.

The draft permit still requires NYCOA, though, to establish a biological monitoring program. The permittee is required to inspect the NCCW filter assembly or filter backwash water for fish that may have become trapped or entrained at least three times a week. All live fish observed must be returned to the Winnipesauke River. A log book must be kept to document the date and time of the inspection, the name of the individual performing the inspection, the species of fish impinged (if any), the total length of the fish, the condition of the fish (alive, injured, dead), and the treatment of the fish (released or discarded). The log book shall be made available to EPA and/or the State upon inspection or request.

As stated in the Assessment of Current Ecological Conditions and Potential Impact of CWIS Operation section of this fact sheet, EPA considers the potential to be very low for fish eggs and larvae to be entrained by the NYCOA's CWIS. No entrainment monitoring is included in the draft permit.

D. Outfall 007

Outfall 007 is the discharge for the backwash pipe. The backwash system removes deposits from a filter located on the discharge side of the non-contact cooling pumps. A pressure activated drain valve opens when a preset pressure differential is reached across the strainer. The discharge from the pumps is used to scour deposits from the strainer and flushes them to the receiving water via the backwash pipe.

In the draft permit the EPA and NHDES-WD have placed limitations on the backwash discharge. The effluent limits employed are the same used for similar backwash systems; such as those used in the electrical power industry, that filter NCCW water. The potential for the backwash water to harm the environment is minimal. The backwash flow represents less than 0.20% of the facility's total non-contact cooling flow. The backwash water flow is not involved with cooling the nylon production process.

V. Essential Fish Habitat and Endangered Species

Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)), EPA is required to consult with NMFS if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." See 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. See 16 U.S.C. § 1802(10). Adversely impact means any impact which reduces the quality and/or quantity of essential fish habitat (EFH). See 50 C.F.R. § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

Essential fish habitat is only designated for fish species for which federal Fisheries Management Plans exist. See 16 U.S.C. § 1855(b)(1)(A). The U.S. Department of Commerce approved EFH designations for New England on March 3, 1999. The Merrimack River is designated EFH for Atlantic Salmon, (Salmo salar).

The NYCOA Facility, like all facilities that withdraw water from a natural waterbody, can impact aquatic resources in three major ways: (A) by the entrainment of small organisms into and through the intake system; (B) by the impingement of larger organisms on the intake screens; and (C) by creating adverse conditions in the receiving waters from the discharge of the effluent. The following discusses these three potential impacts.

Entrainment

Section IV.C.4, **Cooling Water Intake Structures**, of this document, which discusses the cooling water intake structures of this facility, contains detailed information regarding the proposed impacts of the CWISs on all fish species, as well as information on Atlantic salmon in the Merrimack River. Portions of that section are repeated here in order to fully address EFH concerns in the vicinity of the facility.

As specified in Section IV.C.4, only a minimal amount of Atlantic salmon natural spawning is thought to occur in the Merrimack River Basin. Stocking efforts are under way to help restore this species to its historical range in the river. *The Strategic Plan for the Restoration of Anadromous Fish to the Merrimack River* contains detailed information about the efforts underway.

Atlantic salmon eggs are fertilized, hatched and reared under controlled conditions at a hatchery. The resulting fry are placed in the upper Merrimack River and its tributaries. It is possible that some natural spawning of Atlantic salmon may take place in the tributaries upstream of the NYCOA intakes. Any eggs from such spawning, however, would stay buried in the nest created by the female until they hatch. These eggs would not be expected to rise into the water column and drift downstream. Once the eggs hatch, fry generally live near the bottom of the water column and do not travel any appreciable distances. Therefore, any small number of naturally occurring eggs and larvae potentially found in the Upper Merrimack or suitable upstream tributaries to the Upper Merrimack would not be expected to be found close enough to CWISs of the facility to become entrained. Therefore, salmon eggs, larvae, and fry lifestages vulnerable to entrainment are either reared outside of the Basin, or are likely present in spawning habitiat far from the CWISs location.

Impingement

The objective of the stocking program in the Upper Merrimack River Basin is for the fry to establish territories in the upstream waters of the river, where they remain for 2-3 years. After 2-3 years, upon maturation into smolts, the salmon begin their migration downriver towards the ocean. Since stocking locations are upstream of NYCOA’s intake, the smolts would pass by the plant on their way downstream and could be vulnerable to impingement However, upon migration in the spring, during high flows, the higher velocity of the river will tend to carry the smolts past the downstream oriented intakes, and they are unlikely to be drawn into the CWISs. Moreover, any smolts that do swim in the vicinity of the CWIS are likely to be able to resist being impinged on the internal screening of the intake, given its relatively low intake velocities (0.26 ft/sec).

The EPA considers that the Draft Permit conditions and limitations will protect the most sensitive aquatic species, including the Atlantic salmon.

Effluent Discharge

The following summary information regarding the discharge from NYCOA is discussed in detail in this Fact Sheet, specifically in Part VI, Sections C and D.

For Outfall 004, the EPA has determined that the flow limit of 1.5 MGD, the pH limit of the effluent, the temperature limit and the whole effluent toxicity monitoring all comply with and support adherence to the State's Water Quality Standards. In addition, the facility has terminated the use of sodium hypochlorite. The Draft Permit prohibits NYCOA from applying sodium hypochlorite or any other biocide as an antifouling agent in the facility's non-contact cooling water. For Outfall 007, the sample results for Oil and Grease (O&G) and Total Suspended Solids (TSS) for all sampling results since August 2002 have been near or below the non-detect level. The discharge from Outfall 007 has demonstrated compliance with permitted levels.

EPA's Opinion of all Potential Impacts to EFH species

EPA believes that the impacts associated with this facility to EFH species, their habitats and forage, have been minimized to the extent that no significant impacts are expected. Therefore, additional mitigation is not warranted. Monitoring proposed in the Draft Permit will provide contemporary, site-specific water quality data to further support this position. If adverse impacts to EFH do occur as a result of this permit action, or if new information becomes available that changes the basis for this determination, then NMFS will be notified and consultation will be promptly initiated.

Endangered Species

The Endangered Species Act (16 USC 1451 et seq) requires the EPA to ensure that any action authorized by the EPA is not likely to jeopardize the continue existence of any endangered or threaten species or adversely affect its critical habitat. Further, 40 CFR 122.49(c) requires the EPA to consult with the U.S. Fish and Wildlife Service (USFWS) and/or NMFS, as appropriate, to determine particular permit conditions when the regulations of the Endangered Species Act may apply.

Previous consultations with the USFWS and NMFS have indicated there are no endangered species presently know to reside in the area of the Merrimack River where the NYCOA facility discharges. Therefore, it is not necessary for EPA to coordinate with the USFWS and/or

NMFS regarding the Endangered Species Act.

VI. Monitoring, Additional Requirements and Conditions

The effluent monitoring requirements have been established to yield data representative of the discharge under the authority of Section 308(a) of the CWA in accordance with 40 CFR § 122.41(j), 122.44(i) and 122.48. The remaining conditions of the permit are based on the NPDES regulations 40 CFR Parts 122 through 125 and consist primarily of management requirements common to all permits.

A. Outfall 004

The requirement to monitor flow was changed from a once a week to continuously. This revision was made to reflect that NYCOA already employs instrumentation that continuously measures and records cooling water flow. The sampling frequency for both Temperature and pH has been decreased in the draft permit to one sample per week, during the period of October through June, from three samples per week as found in the existing permit. This decrease in monitoring is warranted because monitoring data shows effluent temperatures remain well below the effluent temperature limit, and there is low variability in the effluent temperatures. Effluent temperatures well below their limit and lack of variability, therefore, allows for the lowering of the frequency of temperature monitoring. The requirement to monitor Total Chlorine has been removed from the draft permit since NYCOA no longer employs sodium hypochlorite as an antifouling agent in the non-contact cooling water pipes. Two Whole Effluent Toxicity tests are required in the draft permit to assess toxicity experienced in WET testing conducted in October 2001, January 2002 and August 2002.

Sampling taken in compliance with the draft permits monitoring requirements shall be taken at a location that provides a representative analysis of the effluent. The non-contact cooling water effluent must not be commingled with another discharge.

Outfall 004 Effluent Monitoring Requirements

	Existing Permit		Draft Permit	
Parameter	Sampling Frequency	Sample Type	Sampling Frequency	Sample Type
Flow	1/Week	Recorder	**Continuous**	Recorder
Temperature	3/Week	Grab	**3/Week: Jul-Sep 1/Week: Oct-Jun**	Grab
Total Residual Chlorine	1/Day	Grab	**Removed**	**Removed**

pH	3/Week	Grab	**1/Week**	Grab
WET	1/Permit Cycle	24-hr Composite	**2/Permit Cycle**	24-hr Composite

B. Outfall 007

The sample results for Oil and Grease (O&G) and Total Suspended Solids (TSS) for all sampling results since August 2002 have been near or below the non-detect level. The discharge from Outfall 007 has demonstrated compliance with permitted levels. Accordingly, the backwash discharge sampling has been reduced to once per year from twice per year. The discharge shall be sampled in the month of August. Additionally, since the flow rate from Outfall 007 is relatively insignificant compared to NYCOA's total NCCW discharge, EPA has decided to lower the flow sampling frequency from once per week to once per month.

Carry-over of these limits from the existing to the draft permit is in accordance with the antibacksliding requirements found in 40 CFR §122.44.

Outfall 007 Effluent Monitoring Requirements

	Existing Permit		Draft Permit	
Parameter	Sampling Frequency	Sample Type	Sampling Frequency	Sample Type
Flow	1/Week	Estimate	**1/Month**	Estimate
Oil & Grease	2/Year	Grab	**1/Year**	Grab
TSS	2/Year	Grab	**1/Year**	Grab
pH	2/Year	Grab	**1/Year**	Grab
Total Residual Chlorine	2/Year	Grab	**Removed**	**Removed**

Sampling taken in compliance with the draft permits monitoring requirements shall be taken at a location that provides a representative analysis of the effluent. The non-contact cooling water effluent must not be commingled with another discharge.

VII. Antidegradation

This draft permit is being reissued with an allowable heat load identical to the existing permit. NYCOA has permanently discontinued the use of sodium hypochlorite as an antifouling agent in its non-contact cooling water pipes. There has been no change in the outfall location. EPA has conducted an evaluation of NYCOA's CWIS, and has determined that structure meets BTA requirements. Since the State of New Hampshire has indicated there will be no lowering of water quality and no loss of existing uses, no additional antidegradation review is warranted.

VIII. State Certification Requirements State

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate NH Standards or waives its right to certify as set forth in 40 CFR §124.53.

Upon public noticing of the draft permit, EPA is formally requesting that the State's certifying authority make a written determination concerning certification. The State will be deemed to have waived its right to certify unless certification is received within 60 days of receipt of this request.

The NHDES-WD is the certifying authority. EPA has discussed this draft permit with the Staff of the Wastewater Engineering Bureau and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 CFR §§124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the Clean Water Act Sections 208(e), 301, 302, 303, 306 and 307 and with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition. These less stringent conditions may be established by EPA during the permit issuance process based on information received following the public noticing. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State

law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. The only exception to this is the sludge conditions/requirements implementing Section 405(d) of the CWA. These conditions are not subject to the Section 401 State Certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through the applicable procedures of 40 CFR Part 124.

It should be noted that under CWA § 401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by state law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 CFR §124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." Id. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 CFR §122.4 (d) and 40 CFR §122.44(d).

IX. Comment Period, Hearing Requests, and Procedures for Final Decisions.

All persons, including applicants, who wish to comment on any condition of the Draft Permit must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to:

Mr. John Paul King, Environmental Scientist
U.S. Environmental Protection Agency
1 Congress Street
Suite 1100 (Mailcode CPE)
Boston, Massachusetts 02114-2023
Telephone: (617) 918-1295
FAX No.: (617) 918-1505

Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the NHDES. Such requests shall state the nature of the issue proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston Office.

Following the close of the comment period, and after a public

hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Permits may be appealed to the Environmental Appeals Board in the manner described at 40 CFR §124.19.

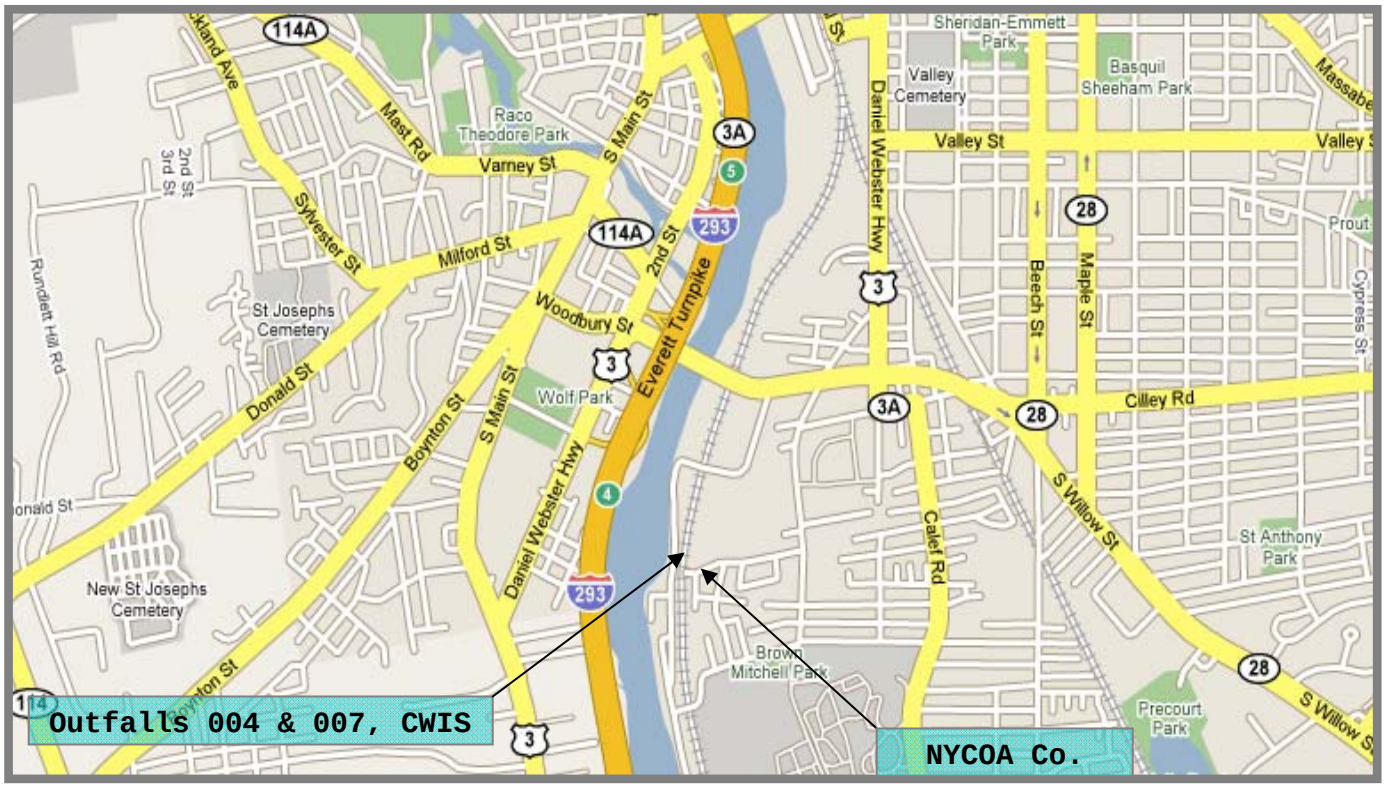
Information concerning the Draft Permit may be obtained from the contact person named above between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays.

_____
Date

Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

ATTACHMENT A

Map Location of NYCOA, Outfall 004, Outfall 007, and Cooling Water Intake Structure



ATTACHMENT B

TABLE I
EFFLUENT CHARACTERISTICS AT OUTFALLS 004 and 007

The following effluent characteristics were derived from analysis of discharge monitoring data collected from Outfalls 004 and 007 during the 71-month period, August 2001 through February 2006. This data was extracted from the monthly Discharge Monitoring Reports submitted by NYCOA. These effluent values characterize the non-contact cooling water discharged from this facility.

TABLE I.A.: OUTFALL 004

Effluent Characteristic	Average of Average Monthly	Maximum of Maximum Daily[1]
Flow (MGD)	0.62	1.50, 1.43, 1.35
pH (Standard Units)	--	5.93 to 7.78[2]
pH Difference (Standard Units)	0.36	0.55, 0.5, 0.5
Temperature (°F)	60.26	95, 93, 85
Total Residual Chlorine[3] (mg/l)	0.16	0.92, 0.9, 0.9

TABLE I.B.: OUTFALL 007

Effluent Characteristic	Average of Average Monthly	Maximum of Maximum Daily[1]
Flow (MGD)	<0.01	0.01, 0.01, 0.01
pH Difference (Standard Units)	0.1	0.2, 0.2, 0.2
Oil & Grease(mg/l)	5.0	5.0, 5.0, 5.0
TSS (mg/l)	5.0	5.0, 5.0, 5.0
Total Residual Chlorine(mg/l)	0.0001	0.01, 0.0, 0.0

1. More than one number represents the second and third highest values.
2. Numbers listed are minimum and maximum daily readings experience over the reporting period.
3. NYCOA permanently discontinued the use of chlorine as a biocide in June 2004.

ATTACHMENT B (con't)

TABLE II

OUTFALL 004 WHOLE EFFLUENT TOXICITY TESTING

Effluent Test[1]	Minimums of Maximum Test Result		
LC50[2] (Per Cent Effluent)			
Ceriodaphnia dubia	>100	>100	>100
Pimephales promelas	>100	>100	>100
C-NOEC[3] (Per Cent Effluent)			
Ceriodaphnia dubia	50	50	100
Pimephales promelas	12.5	50	25

1. Ceriodaphnia dubia WET tests conducted July 2001, March 2002 and January 2002. Pimephales promelas WET tests conducted October 2001, January 2002 and August 2002.

2. This test involves preparing a series of effluent concentrations by diluting the effluent with control water. Groups of test organisms, i.e. Ceriodaphnia dubia and Pimephales promelas, are exposed to each effluent concentration and a control for a specific period. The mortality data for each concentration can be used to calculate (by regression) the medium lethal concentration or LC-50. LC-50 is defined as the concentration which kills half the test organisms. Samples with a high LC-50 value are less likely to impact an organism's survival.

3. This test measures the sublethal effects by exposing test organisms to effluent samples during a sensitive period in their life cycle. Chronic minnow (Pimephales promelas) tests measure growth (weight) and survival during the seven-day test; chronic daphnid (Ceriodaphnia dubia) tests measure juvenile production and survival. Using Analysis of Variance techniques to evaluate data, it is possible to determine the highest concentration of effluent where no effect (C-NOEC) was observed.

ATTACHMENT C

OUTFALL 004 AVERAGE MONTHLY COOLING WATER DISCHARGE RATES